

Last year Mr. E. Bethel found a white-flowered form (*albi-  
orum*, nov.) below the glacier.

The continued observation of variations in plants, in different parts of the world, brings out the fact that these are (unless environmental) almost always due to the shuffling or loss of genes which are themselves of great antiquity. Thus the comparative study of minor differences becomes increasingly important for the understanding of the origin of species, as well as for horticulture. With our greatly increased knowledge of the processes of heredity, we can now go into the field and interpret our observations in ways formerly impossible, so that the study of variation becomes increasingly fruitful.

In Europe the minute study and taxonomic treatment of plant-variation has been carried to extremes unknown in this country. The European literature in large part needs reinterpretation in the light of genetic research, but it affords an invaluable basis for comparisons.

## PLEISTOCENE PLANTS FROM INDIAN HEAD, MARYLAND.

BY EDWARD W. BERRY

About a year ago I received a small collection of plant remains from Mr. Geo. B. Lloyd who collected them at the bottom of a dug well at Indian Head in Charles County, Maryland. The well is in the Talbot formation and is located near the 20-foot contour on the northern edge of the valley of Mattawoman Creek.

The materials passed through in the digging of the well, as reported by Mr. Lloyd, are as follows:

	Feet
Yellow clay . . . . .	10
Fine yellow sand . . . . .	12
Gravel . . . . .	9
Blue clay with vivianite . . . . .	10
Bluish sandy clay with leaves . . . . .	1½

A considerable flora has previously been recorded from the Pleistocene of Maryland, the interest in the present small collection consisting in the clearly indicated changes of level since

the leaves were buried. The leaves were buried at near sea level, or if the water was a few feet deep there was evidently only the finest detrital materials being brought down by the valley stream, and this quiescent condition continued during the time represented by the 10 feet of clay overlying the leaf-bearing layer. Subsidence with quickening erosion followed and the surface of the estuary finally rose to at least 40 feet above the plant layer. This was followed by reversal of movement which finally resulted in bringing the surface at least 20 feet above sea level.

The recognizable plants are all recent species most of which are common Pleistocene types. *Fraxinus americana* has not heretofore been recorded in the Pleistocene but it and all of the other forms are still common in the Potomac valley except the Bald Cypress, which is no longer found in the immediate vicinity, although several cypress swamps are still present farther south in Charles County. The Liriodendron is represented by a characteristic juvenile leaf such as is rarely found fossil.

### Order *CONIFERALES*

#### Family *PINACEAE*

#### Genus *TAXODIUM* L. C. Richard

#### *TAXODIUM DISTICHUM* (Linnaeus) L. C. Richard

The remains of the bald cypress are very common in American Pleistocene deposits from New Jersey and Maryland southward, where they are represented by the deciduous twigs, cone scales, seeds, aments, and stumps with the characteristic "knees."

A few of the deciduous twigs occur in the present collection.

### Order *FAGALES*

#### Family *FAGACEAE*

#### Genus *FAGUS* Linnaeus

#### *FAGUS AMERICANA* Sweet

The beech is widely distributed in the fluvial Pleistocene deposits of the Southern States, where it is commonly represented

by nuts and husks as well as leaves. Leaves are sparingly represented in the present collection. In the existing flora the beech is a common river-bottom type ranging from southern Canada to Florida and Texas.

QUERCUS MICHAUXII Nuttall

This oak has already been recorded from the late Pleistocene (Chowan formation) of North Carolina. There are several leaves in the present collection. In the existing flora the cow oak is found in bottoms and similar wet situations from Delaware to Texas.

QUERCUS PALUSTRIA Du Roi

A single specimen occurs in the present collection. The species has been already recorded from the Pleistocene of the Port Kennedy Bone Cave in Pennsylvania where a cupule was found, and from the Chowan formation of North Carolina, where both leaves and characteristic cupules were collected. In the existing flora it has a wide range especially in the coastal plain.

Order *URTICALES*

Family *ULMACEAE*

Genus *ULMUS* Linnaeus

*ULMUS AMERICANA* Linnaeus

This is a species of low rich woods and stream banks, ranging from Newfoundland and Ontario to Florida. It is common in the Interglacial deposits of the Don Valley in Ontario but has not been previously recorded from the coastal plain. There are two specimens in the present collection.

Order *PLATANALES*

Genus *PLATANUS* Linnaeus

*PLATANUS OCCIDENTALIS* Linnaeus

This modern inhabitant of low woods and banks from Canada to Florida and Texas is frequent in the bottom lands of the coastal and midland zones in Maryland. As a fossil it is of frequent

occurrence in Pleistocene deposits from those of the Don Valley in Canada to Alabama. Fragments of the leaves are among the commonest forms in the present collection.

Order *RANALES*

Genus *LIRIODENDRON* Linnaeus

*LIRIODENDRON TULIPIFERA* Linnaeus

This common mesophile forest type ranges from New England to northern Florida and southern Alabama and Mississippi. Previous fossil records are based on fruits and leaves from Alabama and upon abundant leaves from the Wicomico formation near Weldon, North Carolina.

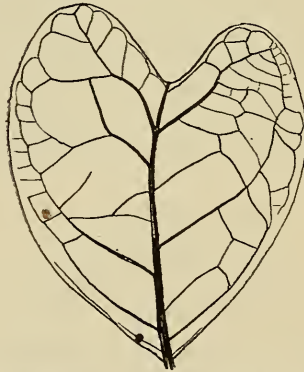


Fig. 1. Juvenile leaf of *Liriodendron tulipifera* L., from the Talbot Pleistocene of Indian Head, Md.

The present record is based upon the characteristic juvenile leaf figured.

Order *GENTIANALES*

Family *OLEACEAE*

Genus *FRAXINUS* Linnaeus

*FRAXINUS AMERICANA* Linnaeus

The white ash is found in rich rather moist woods from Canada to northern Florida, central Alabama and Mississippi. Both large and small leaflets occur in the present collection. It does not appear to have been recorded heretofore from the Pleistocene.